

What is claimed is:

1. A photoelectron generating plate comprising on a substrate a photoelectron emission layer for emitting photoelectrons by an illumination of a light and having a barrier property.
2. The photoelectron generating plate of claim 1, wherein the substrate is conductive.
3. The photoelectron generating plate of claim 2, wherein the substrate is made of a stainless steel.
4. The photoelectron generating plate of claim 1, wherein a conductive layer is located between the substrate and the photoelectron emission layer.
5. The photoelectron generating plate of claim 4, wherein the conductive layer is made of a metal.
6. The photoelectron generating plate of claim 1, wherein a thickness of the photoelectron emission layer is greater than a maximum surface roughness of an underlying layer thereof.
7. The photoelectron generating plate of claim 1, wherein

the photoelectron emission layer is formed by a deposition method.

8. The photoelectron generating plate of claim 1, wherein  
5 the photoelectron emission layer is conductive.

9. The photoelectron generating plate of claim 1, wherein  
the photoelectron emission layer is made of a ceramic  
material.

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10. The photoelectron generating plate of claim 9, wherein  
the photoelectron emission layer is made of an element  
selected from the group consisting of titanium nitride,  
titanium carbide, zirconium nitride and zirconium carbide.

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11. A negative particle generating device comprising the  
photoelectron generating plate of claim 1 and a light source  
for illuminating a light thereon.

20 12. A negative particle generating device comprising the  
photoelectron generating plate of claim 2 and a light source  
for illuminating a light thereon, wherein the substrate in  
the photoelectron generating plate is electrically grounded.

25 13. A negative particle generating device comprising the  
photoelectron generating plate of claim 4 and a light source

for illuminating a light thereon, wherein the conductive layer included in the photoelectron generating plate is electrically grounded.

5 14. The negative particle generating device of claim 11, wherein oxygen gas runs through the surface of photoelectron generating plate to thereby have negative particles generated.

10 15. A photoelectron generating plate comprising a barrier layer having a barrier property on a substrate and a photoelectron emission layer disposed on the barrier layer and emitting photoelectrons by an illumination of a light thereon.

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16. The photoelectron generating plate of claim 15, wherein the barrier layer is made of an oxide of Si, Ti, Zr or Al, a nitride of Si or Al, or a composite thereof.

20 17. The photoelectron generating plate of claim 15, wherein the barrier layer is conductive.

18. The photoelectron generating plate of claim 17, wherein the barrier layer is made of a nitride or a carbide  
25 of Ti or Zr, indium tin oxide (ITO), or tin oxide, or a composite thereof.

19. The photoelectron generating plate of claim 17,  
wherein the substrate is conductive.

5 20. The photoelectron generating plate of claim 19,  
wherein the substrate is made of a stainless steel.

21. The photoelectron generating plate of claim 15,  
wherein the photoelectron emission layer is conductive.

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22. The photoelectron generating plate of claim 15,  
wherein a thickness of the photoelectron emission layer is  
greater than a maximum surface roughness of the barrier  
layer.

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23. A negative particle generating device comprising the  
photoelectron generating plate of any one of claims 15, 17  
and 19 and a light source for illuminating a light on the  
photoelectron emission layer of the photoelectron generating  
20 plate.

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24. The negative particle generating device of claim 23,  
wherein oxygen gas runs through the surface of photoelectron  
generating plate to thereby have negative particles  
25 generated.

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25. A negative particle generating device comprising:

a mesh-shaped photoelectron generating member being electrically grounded; and

a vessel including therein a light source for  
5 illuminating a light to the mesh-shaped photoelectron generating member;

wherein the light is illuminated to the mesh-shaped photoelectron generating member and simultaneously air runs through a surface of the photoelectron generating member to  
10 thereby have negative particles generated,

wherein the mesh-shaped photoelectron generating member is installed in the vessel so that the air flowing in the vessel impinges onto the photoelectron generating member.

15 26. The negative particle generating device of claim 25, wherein the light illuminated to the mesh-shaped photoelectron generating member is ultraviolet ray.

27. The negative particle generating device of claim 25,  
20 wherein the mesh-shaped photoelectron generating member is mounted on a mesh-shaped conductive member.

28. The negative particle generating device of claim 25, further comprising a ventilator for providing the air to the  
25 mesh-shaped photoelectron generating member.

29. A charge removing device comprising:

a light source emitting a light of a wavelength not less than about 200 nm;

a photoelectron generating plate for emitting  
5 photoelectrons by a light from the light source; and

a ventilator for having gas including at least oxygen to run near a surface of the photoelectron generating plate,

wherein the gas running near the surface of the photoelectron generating plate illuminated by the light from  
10 the light source is sprayed to a target member to thereby remove a positive charge thereof.

30. The charge removing device of claim 29, wherein the surface of the photoelectron generating plate, which emits  
15 the photoelectrons when the light is illuminated, also serves as a barrier layer.

31. The charge removing device of claim 29, wherein the photoelectron generating plate includes a photoelectron  
20 emission layer which emits the photoelectrons when the light is illuminated and an underlying barrier layer.

32. The charge removing device of claim 29, wherein the surface of the photoelectron generating plate is  
25 electrically grounded.

33. A vacuum cleaner comprising the charge removing device of claim 29, wherein the gas from the charge removing device is sprayed to a floor to thereby suck a dust attached to the floor while removing positive charges thereon.

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34. A vacuum cleaner comprising the charge removing device of claim 29, wherein the gas from the charge removing device is sprayed into a dust collecting unit to thereby remove positive charges of a dust collected therein and a wall of  
10 the dust collecting unit so that the dust attached therein can readily be eliminated.

35. An air blow device comprising the charge removing device of claim 29, wherein the gas from the charge removing  
15 device is sprayed to a target member with a high pressure to thereby blow off a dust attached to the target member while removing positive charges thereon.

36. The air blow device of claim 35, wherein the target.  
20 member is a semiconductor, a liquid crystal glass or a photo disk.

37. An air shower device comprising the charge removing device of claim 29, wherein the gas from the charge removing  
25 device is sprayed to a human body or a target member with a high pressure to thereby blow off a dust attached thereto

while removing positive charges thereon.